AN ADAPTIVE WIDEBAND DIGITAL AMPLIFIER
FOR LINEARLY MODULATED SIGNAL
AMPLIFICATION AND TRANSMISSION
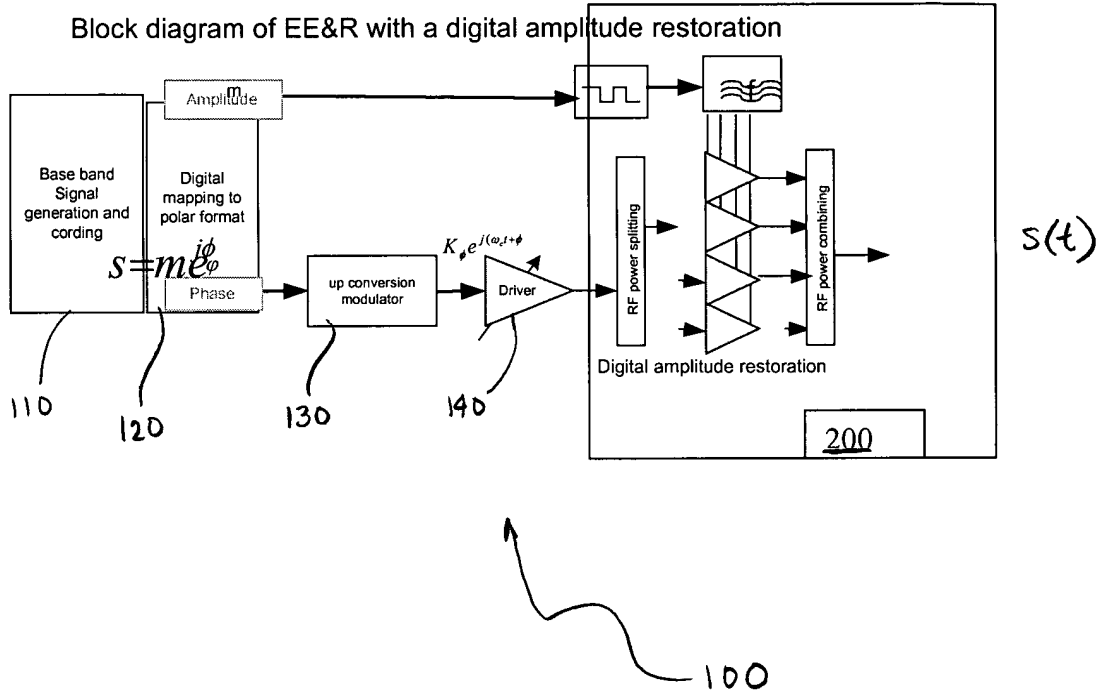Inventors: Hong Gan et al.
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Figure 1

Block diagram of EE&R with a digital amplitude restoration

$$s(t) \approx (K_{ref} f \otimes \sum_{i=1}^{N} b_i 2^i + \sum_{j}^{M} K_j f \otimes \sum_{k=0}^{N} (2^k + 1)) K_\phi e^{j(\omega_c t + \varphi(t))}$$

$$m \approx (K_{ref} \sum_{i=1}^{n} b_i 2^i + \sum_{j}^{M} K_j \sum_{k=0}^{n} (2^k + 1))$$

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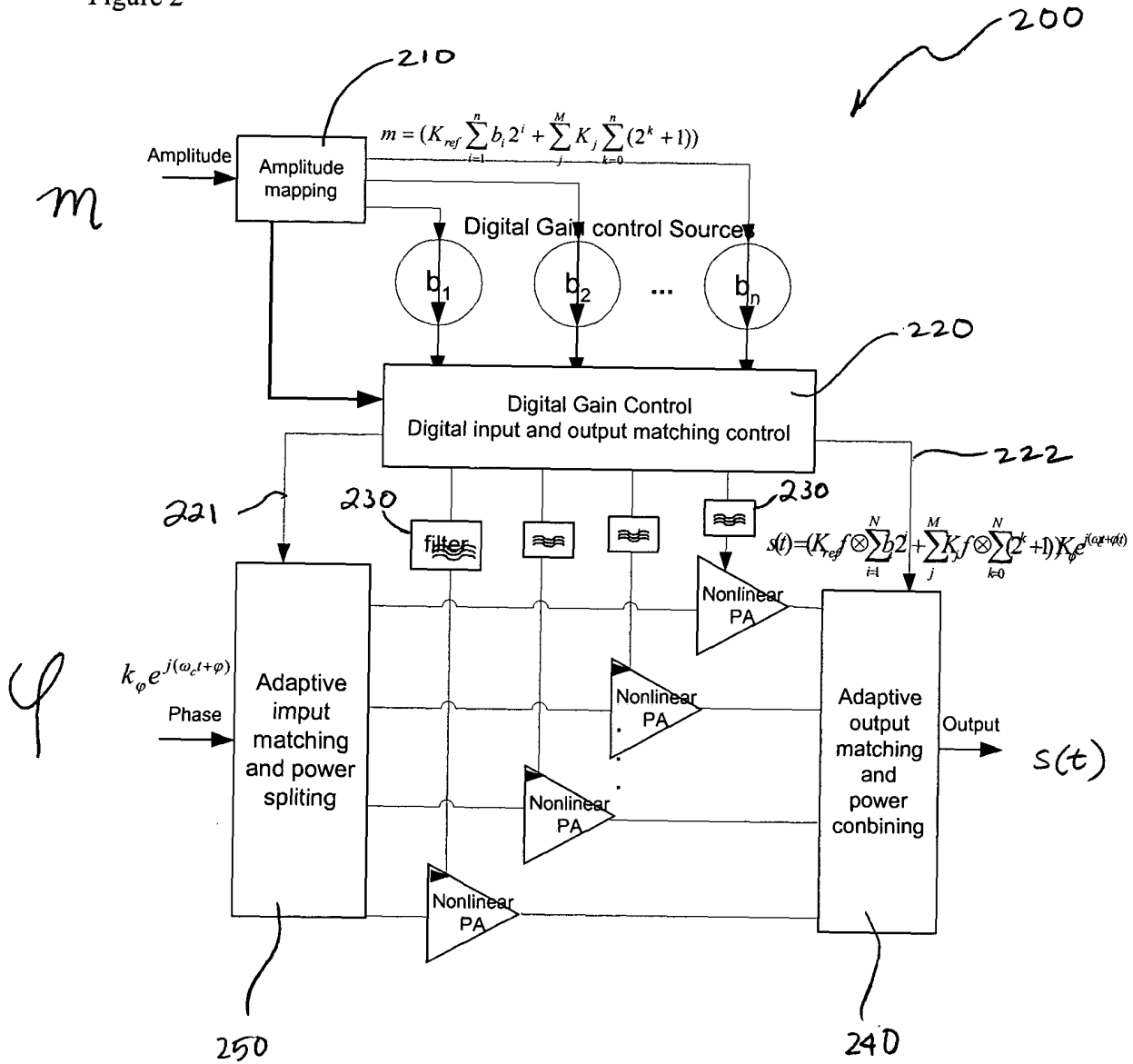Sheet 2 of 3
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Figure 2

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Figure 3

Input and quantization of amplitude signal — 310

Does the quantization level exceed the gain control source range? — 320

no

yes

Use multi PA and set the requirement of maximum gain PAs

330

Set the fractional gain — 340

Output amplitude and phase resorted signal:

$$s(t) = (K_{ref}f \otimes \sum_{i=1}^{N} b_i 2^i + \sum_{j}^{M} K_j f \otimes (\sum_{k=0}^{N} 2^k + 1)) K_\phi e^{j(\omega_c t + \varphi(t))}$$

— 350